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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,644	09/15/2003	Tatsuo Suzuki	0505-1247P	7994

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BIRCH STEWART KOLASCH & BIRCH  
PO BOX 747  
FALLS CHURCH, VA 22040-0747

EXAMINER
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LUONG, VINH

ART UNIT	PAPER NUMBER
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3682

DATE MAILED: 04/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/661,644

Applicant(s)

SUZUKI, TATSUO

Examiner

Vinh T. Luong

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

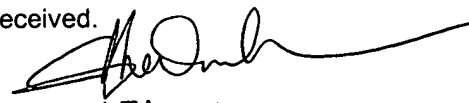
**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

  
Vinh T. Luong  
Primary Examiner

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/13/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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1. Claims 1-20 are objected to because of the following informalities: the claims contain typographical or grammatical errors. For example, “predetermined length” in claims 1 and 12 should have been “a predetermined length.” Appropriate correction is required.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear whether the term that appears at least twice, e.g., “a pin hole” in claims 1 and 12 refers to the same or different things. See double inclusion in MPEP 2173.05(o). Applicant is respectfully urged to identify each claimed element with reference to the drawings.

The phrase “*like* a non-circular shape” in claims 2-4, 14, and 15 is indefinite since it is unclear what is *like* a non-circular shape, but is not a non-circular shape. See “or the like” in MPEP § 2173.05(d).

The term “substantially” in claims 2, 9, 13, and 19 is a relative term which renders the claim indefinite. The term “substantially” is not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For example, in claim 2, it is unclear what dimension is required in order to be “substantially one half of the thickness of said crank web.”

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The meaning of the term “*ordinary*” in the recitation “an *ordinary* press-in allowance” in claims 1 and 12 is unclear since the specification does not define the difference between the ordinary press-in allowance and the extraordinary press-in allowance.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 12, and 13, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Nakajima et al. (JP 60-37411 cited and described in paragraphs [0005]-[0012] of Applicant’s specification).

Regarding claims 1 and 12, Nakajima teaches an assembly type crankshaft, comprising: a crank pin 15 of a crankshaft (Figs. 2 and 3); and at least one crank web 1 of the crankshaft, the crank pin 15 and the at least one crank web 1 being fabricated as separate members to be assembled together by pressing said crank pin 15 into a pin hole 2 provided in said crank web 1, wherein said crank pin 15 is formed as a hollow member, and after said crank pin 15 is pressed into said pin hole 2 provided in said crank web 1 with an ordinary press-in allowance, a plug member 6 having a predetermined length, shorter than a thickness of said crank web 1 (Fig. 2), is pressed into an end portion of a hollow hole or apertures 15a provided in both ends of said crank pin 15, and said crank web 1 is bent and deformed in an up-and-down direction thereof (due to the surface pressure between an inner circumferential surface of the crank pin 15 and an inner circumferential surface of the pin hole 2). *Id.* English abstract.

Claims Nakajima anticipates 1 and 12 and other claims below because Nakajima teaches each positively claimed element in the claims. On the one hand, Nakajima also teaches the method of “press in” or “press into” (i.e., press-fitted) as seen in the abstract. On the other hand, the determination of patentability of Applicant’s product-by-process claim is based on the product itself, not by its method of production. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985); *SmithKline Beecham Corp. v. Apotex Corp.*, Fed. Cir., No. 04-1522, 2/24/2006; and MPEP 2113.

Regarding claims 2 and 13, the predetermined length of said plug member 6 to be pressed into the end portion of the hollow hole 15a in said crank pin 15 is smaller than *substantially* one half of the thickness of said crank web 1 (see the length 25a or 35a in Fig. 4 or 5).

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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8. Claims 3-5, 7, 8, and 14-18 as best understood, are rejected under 35 U.S.C. 103(a) as obvious over Nakajima et al. (JP 60-37411 37411 cited and described in paragraphs [0005]-[0012] of Applicant's specification).

Regarding claims 3 and 14, Nakajima teaches the invention substantially as claimed.

However, Nakajima's plug member is shaped like a circular shape.

It is common knowledge in the art to change Nakajima's circular shaped plug to non-circular shaped plug in order to connect Nakajima's plug with Nakajima's crank pin. The use of non-circular shape is notoriously well known in the art as evidenced by, e.g., non-circular shape 31 in US Patent No. 3,147,638 issued to Rice, non-circular shape 6a in US Patent No. 1,950,009 issued to Newman, non-circular shape 16 in US Patent No. 2,471,982 issued to Shulda; non-circular shape 20 in US Patent No. 5,009,124 issued to Beaurepaire et al., non-circular shape in US Patent No. 1,783,825 issued to Brown et al., and non-circular shape 18, 22 in US Patent No. 5,207,120 issued to Arnold et al. In other words, to change Nakajima's circular shape to non-circular shape would have been a matter of choice in design since the claimed structures and the function they perform are the same as the prior art. *In re Chu*, 66 F.3d 292, 36 USPQ2d 1089 (Fed. Cir. 1995) citing *In re Gal*, 980 F.2d 717, 719, 25 USPQ2d 1076, 1078 (Fed. Cir. 1992). See also legal precedent regarding changes in shape in MPEP 2144.04.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to change Nakajima's circular shaped plug to non-circular shaped plug in order to connect Nakajima's plug with Nakajima's crank pin as taught or suggested by common knowledge in the art.

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Regarding claims 4, 5, 15, and 16, Nakajima teaches the invention substantially as claimed. However, Nakajima does not teach the sizes or dimensions, such as, the length of the cross-sectional shape in the direction of the minor axis is 0.5 to 1 mm, and ordinary press-in allowance is 50 to 100  $\mu\text{m}$ .

It is common knowledge in the art to change Nakajima's sizes or dimensions as claimed in order to connect Nakajima's plug with Nakajima's crank pin. The sizes or dimension as claimed would have been a matter of choice in design since the claimed structures and the function they perform are the same as the prior art. *In re Chu, supra*. See legal precedent regarding changes in size/proportion in MPEP 2144.04.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to change Nakajima's sizes or dimensions as claimed in order to connect Nakajima's plug with Nakajima's crank pin as taught or suggested by common knowledge in the art.

Regarding claims 7, 8, 17, and 18, Nakajima teaches the invention substantially as claimed. However, Nakajima's crank pin has a circular shape.

It is common knowledge in the art to change Nakajima's circular shaped crank pin to elliptical or polygonal cross-sectional shape in order to connect Nakajima's crank pin with Nakajima's web. The use of elliptical or polygonal shape is notoriously well known in the art as evidenced by, e.g., elliptical shape 6a, 12 in US Patent No. 1,950,009 issued to Newman and polygonal shape 18, 22 in US Patent No. 5,207,120 issued to Arnold et al. In other words, to change Nakajima's circular shape to elliptical or polygonal shape would have been a matter of

choice in design since the claimed structures and the function they perform are the same as the prior art. *In re Chu* and MPEP 2144.04, *supra*.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to change Nakajima's circular shaped crank pin to elliptical or polygonal crank pin in order to connect Nakajima's crank pin with Nakajima's crank web as taught or suggested by common knowledge in the art.

9. Claims 1, 2, 6, and 9, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Newman (US Patent No. 1,950,009).

Regarding claim 1, Newman teaches an assembly type crankshaft, comprising: a crank pin 2 of a crankshaft; and at least one crank web 1 of the crankshaft, the crank pin 2 and the at least one crank web 1 being fabricated as separate members to be assembled together by pressing said crank pin 2 into a pin hole (unnumbered in Fig. 1) provided in said crank web 1, wherein said crank pin 2 is formed as a hollow member, and after said crank pin 2 is pressed into said pin hole provided in said crank web 1 with an ordinary press-in allowance, a plug member 9, 11 having a predetermined length, shorter than a thickness of said crank web 1 (Fig. 1), is pressed into an end portion of a hollow hole 7 in said crank pin 2, and said crank web 1 is inherently bent and deformed in an up-and-down direction thereof (due to the surface pressure between an inner circumferential surface of the crank pin 1 and an inner circumferential surface of the pin hole).

Newman anticipates claim 1 and other claims below because Newman teaches each positively claimed element in the claims. It is well settled that the determination of patentability of Applicant's product-by-process claim is based on the product itself, not by its method of production. *In re Thorpe*; *SmithKline Beecham Corp. v. Apotex Corp.*; and MPEP 2113, *supra*.

Regarding claim 2, said predetermined length of said plug member 6, 9 to be pressed into the end portion of the hollow hole 7 in said crank pin 2 is equal to or smaller than substantially one half of the thickness of said crank web 1 as shown in Fig. 1.

Regarding claim 6, the plug member 9, 11 includes a collar portion 9 for preventing oil leakage which may occur from a clearance between the plug member 6, 9 and the hollow hole 7.

Regarding claim 9, said predetermined length of said plug member 6, 9 to be pressed into the end portion of the hollow hole 7 in said crank pin 2 is equal to or smaller than substantially one third of the thickness of said crank web 1 as shown in Fig. 1.

10. Claims 1, 2, 6, 8, 9, 11-13, 18, and 19, as best understood, are rejected, are rejected under 35 U.S.C. 102(b) as being anticipated by Taylor (US Patent No. 2,364,109).

Regarding claims 1 and 12, Taylor teaches an assembly type crankshaft, comprising: a crank pin 17 of a crankshaft; and at least one crank web 11 of the crankshaft, the crank pin 17 and the at least one crank web 11 being fabricated as separate members to be assembled together by pressing said crank pin 17 into a pin hole 12 provided in said crank web 11, wherein said crank pin 17 is formed as a hollow member, and after said crank pin 17 is pressed into said pin hole 12 provided in said crank web 11 with an ordinary press-in allowance, a plug member 33, 34 having a predetermined length, shorter than a thickness of said crank web 11, is pressed into an end portion of a hollow hole/an aperture (unnumbered) in said crank pin 17, and said crank web 11 is inherently bent and deformed in an up-and-down direction thereof (due to the surface pressure between an inner circumferential surface of the crank pin 17 and an inner circumferential surface of the pin hole 12).

Claims Taylor anticipates 1 and 12 and other claims below because Taylor teaches each positively claimed element in the claims. Note that when one inserts the plug 33, 34 into the hollow hole/aperture in the crank pin 17, one inherently must press the plug 33, 34 in the hollow hole/aperture. See line 17 *et seq.*, left column 3. On the other hand, the determination of patentability of Applicant's product-by-process claim is based on the product itself, not by its method of production. *In re Thorpe*; *SmithKline Beecham Corp. v. Apotex Corp.*; and MPEP 2113, *supra*.

Regarding claims 2 and 13, said predetermined length of said plug member 33, 34 to be pressed into the end portion of the hollow hole in said crank pin 17 is equal to or smaller than substantially one half of the thickness of said crank web 11 as shown in the drawings.

Regarding claim 6, the plug member 34 includes a collar portion 36, 38 for preventing oil leakage which may occur from a clearance between the plug member 34 and the hollow hole (Fig. 8).

Regarding claims 8 and 18, the crank pin 17 has a polygonal cross-sectional shape 19.

Regarding claims 9 and 19, said predetermined length of said plug member 33, 34 to be pressed into the end portion of the hollow hole in said crank pin 17 is equal to or smaller than substantially one third of the thickness of said crank web 11 as shown in the drawings.

Regarding claim 11, the hollow hole of the crank pin 17 has a wall with a predetermined wall thickness, the wall including a passage portion 29, 32 through which lubricating oil passes into the hollow hole.

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11. Claims 10 and 20 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Rice, Newman, Beaurepaire et al., Shulda, Brown, and Arnold et al., Gaspardo (non-circular shape 7 or 12), and Schafer et al. (Figs. 1-11).


13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vinh T. Luong whose telephone number is 571-272-7109. The examiner can normally be reached on Monday - Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on 571-272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Luong

April 4, 2006



Vinh T. Luong  
Primary Examiner